What is claimed is:

1. A ^{12}C or ^{13}C isotopic diamond which is boron-doped, has a high thermal conductivity and is isotopically purified.

2. A ^{12}C or ^{13}C isotopic diamond which is boron-doped, has a high thermal conductivity and is isotopically purified as claimed in Claim 1, wherein the purity of the ^{12}C or ^{13}C isotope of said isotopic diamond is at least 99.5%.

3. A ^{12}C or ^{13}C isotopic diamond which is boron-doped, has a high thermal conductivity and is isotopically purified as claimed in Claim 1, wherein the purity of the ^{12}C or ^{13}C isotope of said isotopic diamond is at least 99.5% and said high thermal conductivity is higher than that of a high-purity diamond with a natural isotopic ratio at room temperature by 15-50%.

4. A ^{12}C or ^{13}C isotopic diamond which is boron-doped, has a high thermal conductivity and is isotopically purified as claimed in Claim 1, wherein the concentration of said boron is less than 100 ppm.

5. A ^{12}C or ^{13}C isotopic diamond which is boron-doped, has a high thermal conductivity and is isotopically purified as claimed in Claim 3, wherein said high thermal conductivity is higher than that of a high-purity diamond with a natural isotopic ratio at room temperature by 30-50%.

6. A luminescent device comprising a ^{12}C or ^{13}C isotopic diamond which is boron-doped, has a high thermal conductivity and is isotopically purified.

7. A semiconductor device comprising a ^{12}C or ^{13}C isotopic diamond which is boron-doped, has a high thermal conductivity and is isotopically purified.

8. A process for producing a ^{12}C or ^{13}C isotopic diamond single crystal, comprising providing a carbon containing isotopically purified ^{12}C or ^{13}C as a material, employing a flux containing a nitrogen getter, adding boron into said carbon material and/or the flux, or around said carbon material and the flux, and diffusing said carbon material into the flux under a high pressure and a high temperature, whereby a boron-doped diamond single crystal is formed on a seed crystal diamond.

9. A process for producing a ^{12}C or ^{13}C isotopic diamond single crystal as claimed in Claim 8, wherein the purity of the ^{12}C or ^{13}C isotope of said material carbon is at least 99.5%.

10. A process for producing a ^{12}C or ^{13}C isotopic diamond single crystal as claimed in Claim 8, wherein the concentration of said boron is less than 100 ppm.

11. A process for producing a ^{12}C or ^{13}C isotopic diamond single crystal as claimed in Claim 8, wherein said material carbon is a pyrolytic carbon, a diamond synthesized by chemical deposition, or a diamond-like carbon synthesized by chemical decomposition.

12. A process for producing a ^{12}C or ^{13}C isotopic diamond which is boron-doped and has a high thermal conductivity, comprising providing a mixed gas of an isotopically purified hydrocarbon or carbon monoxide or carbon dioxide containing ^{12}C or ^{13}C or a mixed gas of at least two thereof and hydrogen, adding a doping component thereto, and forming a diamond in a thin-film state on a substrate in the presence of a reaction atmosphere.

13. A process for producing a ^{12}C or ^{13}C isotopic diamond which is boron-doped and has a high thermal conductivity as claimed in Claim 11, wherein the hydrocarbon comprising isotopically purified ^{12}C or ^{13}C is $^{12}CH_4$ or $^{13}CH_4$.

14. A ^{12}C or ^{13}C isotopic diamond which is boron-doped, has a high thermal conductivity and is isotopically purified as claimed in Claim 1, wherein said high thermal conductivity is from about 26-31 W/cm°K.

15. A process for producing a ^{12}C or ^{13}C isotopic diamond single crystal as claimed in Claim 8, wherein said isotopic diamond single crystal has a thermal conductivity from about 26-31 W/cm°K.

16. A process for producing a ^{12}C or ^{13}C isotopic diamond which is boron-doped and has a high thermal conductivity as claimed in Claim 12, wherein said high thermal conductivity is from 26-31 W/cm°K.